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Can Self-Esteem Protect Against the Deleterious Consequences of Self-Objectification for Mood and Body Satisfaction in Physically Active Female University Students?

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Using objectification theory (Fredrickson & Roberts, 1997), this study tested the interaction between self-objectification, appearance evaluation, and self-esteem in predicting body satisfaction and mood states. Participants ($N = 93$) were physically active female university students. State self-objectification was manipulated by participants wearing tight revealing exercise attire (experimental condition) or baggy exercise clothes (control condition). Significant interactions emerged predicting depression, anger, fatness, and satisfaction with body shape and size. For participants in the self-objectification condition who had low (as opposed to high) appearance evaluation, low self-esteem was associated with high depression, anger, and fatness and low satisfaction with body shape and size. In contrast, for participants with high self-esteem, these mood and body satisfaction states were more favorable irrespective of their levels of appearance evaluation. For female exercisers, self-esteem-enhancing strategies may protect against some of the negative outcomes of self-objectification.

Keywords: self-objectification, appearance evaluation, body image, self-esteem, mood, exercise

In today's society, there is an intense pressure to look attractive. As a consequence, many women, and to a lesser extent men, engage in appearance monitoring in an effort to manage their appearance and approximate the dominant societal beauty ideals. Objectification theory was proposed by Fredrickson and Roberts (1997) to explain the consequences of preoccupation and surveillance of (female) attractiveness. The theory suggests that many individuals internalize an outsiders' view of their own bodies, termed *self-objectification*, whereby they become preoccupied

with how the body appears to others to the exclusion of focusing on how their body “feels” (Fredrickson & Roberts). Other consequences of self-objectification include an inability to be present “in the moment,” poorer performance on cognitive tasks (Fredrickson & Roberts; Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Quinn, Kallen, Twenge, & Fredrickson, 2006), disordered eating (Calogero, 2009; Fredrickson et al., 1998; Muehlenkamp & Saris-Baglama, 2002; Tiggemann & Kuring, 2004), and poor psychological health (Muehlenkamp & Saris-Baglama; Tiggemann & Kuring). Further, there is broad agreement, based on evidence stemming from laboratory experiments, that women (and sometimes men) experience an increase in body shame, body dissatisfaction, anxiety and depressive mood when exposed to self-objectifying situations (e.g., Fredrickson et al., 1998; Hebl, King, & Lin, 2004).

However, recent research suggests that not all women are negatively affected by self-objectifying situations (Breines, Crocker, & Garcia, 2008). Specifically, levels of self-esteem may be important to consider in understanding the differential effect of self-objectification on well-being. Self-esteem is one of the most important indicators of well-being (Ryff, 1989). As highlighted by Baumeister (1999), individuals with low self-esteem have powerful emotional reactions in response to daily stressors, while people with high levels of self-esteem tend to be more resilient to stress. In line with this suggestion, high levels of self-esteem serve an anxiety-buffering function (Greenberg et al., 1999), and also seem to serve a protective function in the relationship between body image concerns and eating disorders (Cook-Cottone & Phelps, 2003). In contrast, low levels of self-esteem are associated with increased social comparisons (Tiggemann, 2003).

In a diary study examining the role of naturally occurring self-identified self-objectifying situations, Breines et al. (2008) demonstrated that individual differences in self-esteem moderated the effect of self-objectification on well-being, such that women with high levels of self-esteem experienced higher levels of well-being in self-objectifying situations than their lower self-esteem counterparts. This suggests the possibility that women with high self-esteem might be protected against some of the deleterious consequences of self-objectification.

Self-esteem also appears to play an important protective function for well-being when females judge their own attractiveness compared with the attractiveness of others. For example, research with female college students suggests that self-esteem moderates the effects of attractiveness comparisons on body esteem (Jones & Buckingham, 2005). Specifically, the body image of women with low self-esteem was negatively affected by upward social comparison with peers (i.e., comparing themselves to more attractive peers). In contrast, women with high self-esteem experienced higher body esteem when they compared themselves to a more attractive peer than a less attractive one. The results suggest the possibility that women with high self-esteem are not as negatively affected by exposure to body image threats (i.e., comparing oneself to a more attractive other). We aim to examine whether a similar moderation of self-esteem exist in the effects of appearance evaluation, a reflection of how good or bad one generally feels about one's appearance (an attitudinal dimension of body image; Cash, 2002), on mood states in women exposed to self-objectifying situations. Negative appearance evaluation has been shown to be moderately associated with both self-esteem and depression (Foster, Wadden, & Vogt, 1997; Friedman, Reichmann, Costanzo, &

Musante, 2002). This research suggests that self-esteem and appearance evaluation are related yet independent constructs. Appearance evaluation is also important to examine in this context due to its associations with maladaptive weight-related behavior such as chronic dieting (e.g., Gingras, Fitzpatrick, & McCargar, 2004). Appearance evaluation has previously been examined in relation to self-surveillance (an outcome of self-objectification; Frederick, Forbes, Grigorian, & Jarcho, 2007); however, to our knowledge this variable has not been used in experimental studies designed to manipulate states of self-objectification.

Examining the role of self-objectification in exercisers is important because one might expect exercisers to be differentially affected by objectifying situations compared with nonexercisers. One could argue that exercisers are more accustomed to displaying their bodies than their nonexercising peers, and thus the former might be more “immune” to the negative effects of self-objectification. However, research (e.g., Wolfe, 1999) has found that self-objectifying thoughts are often triggered in exercise situations and that women are particularly susceptible to feelings of self-objectification when they exercise. Cross-sectional research suggests that women who self-objectify engage in significantly less physical activity than those who do not self-objectify (Greenleaf, 2005). Further, body surveillance, a commonly used proxy measure of self-objectification, has been associated with decreased trait flow (Greenleaf & McCreer, 2006), and flow experienced during engagement in physical activity (Greenleaf). While it is well established that exercise generally brings about favorable changes in body satisfaction/image (Hausenblas & Fallon, 2006), for some women exercise can exacerbate appearance concerns. Certain exercise environments can bring about increased levels of appearance evaluation concerns among women, such as gymnasiums in which women’s bodies are surrounded by multiple mirrors and in which they are likely to observe other exercising women dressed in revealing attire. This suggests that some exercise environments function as settings for objectification (Prichard & Tiggemann, 2008) and exercising in such environments may be linked with negative mood (Martin Ginis, Jung, & Gauvin, 2003) and poor body image states (Prichard & Tiggemann, 2005). A lot of the empirical work on the effects of self-objectification in exercising individuals has been survey based. Experimental research is needed to examine the causal effects of manipulated states of self-objectification on appearance evaluation and psychological well-being in exercisers.

The purpose of the current study was to examine the moderating effect of self-esteem in the relationship between general appearance evaluation and various mood and body satisfaction states (which can fluctuate; e.g., see Haimovitz, Lansky & O’Reilly, 1993) in physically active women when exposed to a self-objectifying (i.e., experimental) as opposed to a non-self-objectifying (i.e., control) condition. In other words, this study aimed to test three-way interactions between appearance evaluation, self-esteem, and self-objectification in predicting mood and body satisfaction states. We were not interested in main effects or two-way interaction effects, as these were expected to be qualified by the three-way interactions. While the main focus of self-objectification research has been on females, there is evidence that males also engage in self-objectification (Hebl et al., 2004), but the negative consequences of self-objectification are less severe for males compared with females (Fredrickson et al., 1998). Therefore, we recruited only women for our study.

As a manipulation check, we expected that participants in the experimental condition would report a significantly higher percentage of appearance and weight-related statements than those in the control condition. In view of the purpose of the current study, we tested three-way interactions between appearance evaluation, self-esteem, and condition allocation. Specifically, for participants in the experimental (i.e., self-objectified) condition, we predicted that for low self-esteem scores, appearance evaluation should predict more adaptive mood states. In other words, appearance evaluation would be negatively associated with depression, anger and feelings of fatness, and positively associated with happiness, confidence, feelings of physical attractiveness and satisfaction with body shape and size (Hypothesis 1). However, for high self-esteem scores, variations in appearance evaluation levels were not expected to predict mood states (H2). For individuals in the control (i.e., non-self-objectified) condition, levels of self-esteem were not expected to moderate the effects of appearance evaluation on mood and body satisfaction states (H3).

Method

Participants

Participants were 93 female ($M_{\text{age}} = 19.40$; $SD = 1.40$) University students in a sport and exercise science course, self-selected from a participant pool of about 200–250 students. Power calculations, based on Hebl et al.'s (2004) findings for body shame, indicated that we needed 92 participants to detect an effect size of $f^2 = 0.17$ using an alpha error rate of 0.05 and a power level of 0.80. Most participants were of White British origin ($n = 80$). Five participants reported being of Asian or Asian/British decent. In addition there was one White European, one White other, one Black/Black British, one Chinese, one mixed, and one participant of “other” ethnic origin (three participants did not report their ethnic origin). Mean body mass index (BMI; kg/m^2), measured via a Seca digital scale (weight) and a portable Seca stadiometer (height), was 22.17 ($SD = 2.42$). The vast majority of participants reported themselves as heterosexual (98.40%), while the remaining participants were bisexual. Participants received course credit for participating in the study.

Measures

Exercise Behavior. Leisure-time exercise behavior was measured using Godin and Shephard's (1985) questionnaire. The participants were asked to note how frequently they engaged in strenuous, moderate and mild exercise for at least 15 min during their leisure time in a typical week. This measure has been widely adopted in exercise studies; evidence regarding its reliability and validity has been reported by Godin and Shephard.

Trait Self-Objectification. Trait self-objectification was measured using a scale developed by Fredrickson et al. (1998). The participants were asked to rate 10 attributes in terms of how important (1 = *least*; 10 = *most*) each was to their physical self. Five of these items constituted appearance-related attributes (weight, sex appeal, physical attractiveness, firm and sculpted muscles, measurements of chest, waist, and hips), whereas the other half represented non-appearance-related

competence-based items (physical coordination, health, strength, energy level, physical fitness level). To calculate an overall score (ranging from -25 to +25), the sum of the competence-based attributes was subtracted from the sum of the five appearance-based attributes. Higher scores indicated higher levels of trait self-objectification. Support for the construct validity of the scale has been reported in previous studies (e.g., Noll & Fredrickson, 1998; Miner-Rubino, Twenge, & Fredrickson, 2002).

Social Desirability. The Marlowe-Crowne Social Desirability Scale (Form C; Reynolds, 1982) was used to assess the extent to which the participants generally responded in culturally sanctioned ways. The scale consists of 13 items with a forced-choice response format (i.e., *true-false* options). An example item is “I am always willing to admit it when I make a mistake.” Scores range from 0 to 13 with higher scores indicating a greater level of socially desirable responding. Support for the construct validity of the scale has been reported previously (e.g., Robinette, 2006).

Usual Exercise Clothes. The participants were asked to indicate the type of attire they would normally wear to exercise. Four pictures of exercise clothes, varying in the degree to which they were revealing, were presented to the participants. The order of presentation was randomly chosen. The participants were asked to point out the picture illustrating the attire that “most resembled the one they would normally wear when exercising.” The most revealing outfit (allocated a score of 4) consisted of short tight-fitting clothes, while the least revealing constituted baggy shorts and a t-shirt (allocated a score of 1). The measure was designed for the purpose of the current study.

Appearance Evaluation (Cronbach's Alpha = .71). The Appearance Evaluation (AE) subscale from the Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000) was used as an indicator of body image evaluation. The subscale consists of seven items (e.g., “I like my looks just the way they are”) and is scored on a scale ranging from 1 (*definitely disagree*) to 5 (*definitely agree*). Two items are reverse-scored. Higher scores indicate more positive appearance evaluation. Previous studies have provided support for the reliability and validity (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) of the scale.

Self-Esteem (Cronbach's Alpha = .88). Rosenberg's (1979) self-esteem scale consists of 10 items and was used as an indicator of global self-esteem. An example item is “I feel that I'm a person of worth, at least on an equal plane with others.” Items are scored on a four-point scale with response options ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). The questionnaire is unidimensional (Marsh, 1996) and has been extensively tested and validated (Byrne, 1996).

Manipulation Check of State Self-Objectification. A Twenty Statements Test (TST) constructed by Fredrickson et al. (1998) served as a manipulation check. Following the experimental manipulation (see *Procedure*), the participants were asked to “think about how this particular item of clothing makes you feel about yourself and identity.” Subsequently, the participants were asked to write one word for each of twenty statements beginning with “I am.” The coding system used by Fredrickson et al. was adopted, whereby words were coded for statements

representing body shape and size. It was assumed that participants experiencing self-objectification would describe themselves using more body shape and size statements compared with those who were not in a self-objectifying situation (i.e., the control group). Two individuals, unaware of the condition to which the participants were assigned, independently coded the statements. Inter-rater agreement was very high ($\kappa = .91$).

Mood and Body Satisfaction States. Visual Analog Scales (VAS; Heinberg & Thompson, 1995) were used as a measure of anxiety, depression, anger, happiness, confidence, fatness, physical attractiveness and satisfaction with body shape and size. Each state was measured using one item and the participants were asked to draw a vertical mark on a 10-cm line ranging from 0 (*Not at all*) to 10 (*Very much*), indicating the extent to which they experienced that state at that moment. Heinberg and Thompson (1995) found VAS to have good convergence validity by correlating it with longer measures of similar constructs.

Procedure

Following institutional ethical approval, all female students in a sport and exercise science undergraduate degree course were e-mailed an information sheet about the study, which was advertised on the pretext of assessing exercise consumer behavior and emotions. A consent form was included at the end of the information about the study. Participants consented to taking part in the study were sent a Web link directing them to a questionnaire that measured demographic information (gender, age, ethnicity, and sexual orientation), exercise behavior, trait self-objectification, appearance evaluation, and global self-esteem (the order of the questions was the same for all participants). To bolster the cover story, questions concerning exercise consumer behavior, sports clothing, drinks and sports magazines were also included.

On a different day, participants were invited individually to the laboratory for a 45-min session. They were told that they would be providing their opinions on a range of sports-related products: a drink, two magazines (consisting of illustrations of sports equipment rather than athletes or exercisers), some clothes and a nutrition bar. This procedure was similar to that employed by Fredrickson et al. (1998), but it was modified for an exercise context. When the participants entered the laboratory, the experimenter took height and weight measurements. Participants stood with their backs to both the height ruler and the display on the scale, so they could not observe their own measurements. They then completed the social desirability instrument. In accordance with the cover story, the participants then sampled and completed brief scales evaluating an isotonic sports drink and two sports magazines.

Following this, the participants were presented with the four photographs of typical exercise clothing and were asked to indicate the one most closely representing the one that they typically wore when exercising. The next stage of the experiment involved participants trying on the exercise clothes. A range of sizes were available, and the participants were randomly allocated to wear either tight shorts and a sports bra style top (i.e., experimental condition; $n = 46$), or baggy tracksuit trousers and a matching long-sleeved baggy top (i.e., control condition; $n = 47$). The experimenter (a female) handed the clothes to the participant, provided instructions and answered any questions. After which they left the room while the participant completed the next part of the experiment on their own. A poster with

the instructions provided by the experimenter was also available on the wall in the laboratory. Once the experimenter had left the room, the participants changed into the assigned clothes, observed themselves in a full-length mirror for 1 min timed via an electronic watch positioned next to the mirror in the room, and then sat at a table facing the mirror. There, they completed the TST and visual analog scales measuring mood and body satisfaction states, as well as a questionnaire to evaluate the clothing (also constructed to bolster the cover story). Afterward, participants changed back into their own clothes and knocked on the door to signal for the experimenter to return to the room. At the end of the experiment, and as part of the cover story, the participants sampled a nutrition bar and filled in a questionnaire to evaluate its appearance and taste. Finally, the participants were asked to describe the purpose of the experiment. None of the participants suspected its true purpose. A debriefing e-mail was sent after all participants had completed the experiment.

Results

Preliminary Analyses

The mean of self-reported minimum weekly minutes of moderate and vigorous intensity physical activity was 124.13 ($SD = 83.00$). The internal reliability coefficients for all continuous scales ranged from Cronbach's $\alpha = .71$ to $.88$. The strongest correlation coefficient was $r = .45$ (between appearance evaluation and self-esteem), indicating that there was no evidence of multicollinearity within the data. Tolerance values from the regressions reported below were $.60$ and above, also indicating no multicollinearity (Tabachnick & Fidell, 2001). Independent samples t tests showed no significant group (experimental vs. control) differences on all constructs in the questionnaire distributed before the experimental manipulation: exercise behavior, $t(87) = 0.42$; $p > .05$; trait self-objectification, $t(88) = 0.17$; $p > .05$; appearance evaluation, $t(91) = 0.29$; $p > .05$, and global self-worth, $t(88) = 1.08$; $p > .05$.

The means and standard deviations as well as the Pearson correlations among all relevant variables are presented in Table 1, separately by condition.

Manipulation Check

Participants in the experimental group reported a significantly higher percentage of appearance and weight-related statements (63.72% vs. 40.93%; independent samples $t(89) = 3.53$; $p = .001$) than those in the control condition.

Effects of Self-Objectification, Appearance Evaluation and Self-Esteem on Mood and Body Satisfaction States

A series of moderated hierarchical regression analyses were conducted to examine the effects of condition (experimental vs. control), appearance evaluation, and self-esteem on mood and body satisfaction states and thus test our hypotheses. In each analysis we controlled for the influence of trait self-objectification, social desirability and usual exercise clothes worn because we expected that these could be related to the dependent variables (e.g., Miner-Rubino, Twenge, & Fredrickson, 2002).

Table 1 Means, Standard Deviations, and Pearson Correlations Among All Variables, Separately for Each Condition

Variable and Score Range	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1 BMI	22.40 (21.94)	2.78 (2.02)		-.07	.03	-.32*	-.03	.05	.25	.27	-.32*	-.23	.43**	-.28	-.26
2 Social des, 0-13	6.89 (7.15)	2.28 (2.08)	-.09		.17	.23	.44**	-.19	-.24	-.08	.13	.17	-.41**	.10	.26
3 Trait SO, -25 to 25	2.80 (2.38)	11.42 (12.05)	-.17	.25		-.08	.12	-.01	-.18	-.35*	-.11	-.01	-.16	-.29	.25
4 AE, 1-5	3.49 (3.36)	.60 (.65)	-.44**	-.09	.09		.49**	-.38**	-.50**	-.30*	.40**	.33*	-.52**	.35*	.38**
5 SE, 1-4	3.13 (3.03)	.46 (.46)	-.29	.11	-.09	.40**		-.47**	-.44**	-.43**	.35*	.34*	-.36*	.25	.37*
6 Anxiety, 0-10	3.76 (2.49)	2.69 (2.08)	.23	-.24	.07	-.23	-.45**		.66**	.40**	-.49**	-.64**	.62**	-.48**	-.58**
7 Depression, 0-10	2.03 (1.27)	2.53 (1.82)	.37**	-.13	-.10	-.52**	-.32*	.53**		.61**	-.52**	-.59**	.71**	-.38**	-.75**
8 Anger, 0-10	1.04 (.62)	1.90 (1.28)	.30*	-.03	.02	-.41**	-.32*	.42**	.71**		-.14	-.18	.42**	-.14	-.46**
9 Happiness, 0-10	5.89 (6.63)	1.86 (1.74)	-.20	.24	-.09	.19	.38*	-.47**	-.57**	-.32*		.63**	-.59**	.64**	.57**
10 Conf, 0-10	5.22 (6.04)	2.44 (1.89)	-.33*	-.02	.07	.54**	.48**	-.57**	-.63**	-.34*	.69**		-.71**	.54**	.77**
11 Fatness, 0-10	4.01 (3.32)	2.77 (2.36)	.56**	.12	-.20	-.68**	-.30*	.32*	.68**	.43**	-.32*	-.69**		-.52**	-.83**
12 Phys attract, 0-10	5.15 (4.52)	2.19 (1.83)	-.18	-.03	-.05	.37*	.39**	-.38**	-.32*	-.13	.50**	.60**	-.38**		.48**
13 Sat, 0-10	5.46 (5.61)	2.65 (2.54)	-.57**	-.10	.10	.70**	.26	-.22	-.52**	-.29	.38**	.58**	-.76**	.44**	

Note. BMI = Body Mass Index; Social des = Social Desirability; Trait SO = Trait Self-Objectification; AE = Appearance Evaluation; SE = Self-Esteem; Conf = Confidence; Phys attract = Physical Attractiveness; Sat = Satisfaction with body shape and size. The upper diagonal presents the correlations in the experimental condition and the lower diagonal illustrates the correlations in the control condition. Means and *SD* given in parentheses are those in the control condition.

The continuous independent, but not dependent, variables were standardized before being entered into the regression analyses, as recommended by Aiken and West (1991). In the first step, the control variables (usual exercise clothes worn, social desirability and trait self-objectification), condition (1 = high state self-objectification; 0 = low state self-objectification), appearance evaluation and self-esteem were entered. The three two-way interaction terms (condition \times appearance evaluation, condition \times self-esteem, and appearance evaluation \times self-esteem) were added in the second step of the equation. In the final step, the three-way interaction term was added (condition \times appearance evaluation \times self-esteem) to test our hypotheses. Table 2 displays the results of all main and interaction effects for all the outcome variables.

With regard to anxiety, it was positively predicted by state self-objectification. However, none of the 2-way or 3-way interactions were significant. Thus, H1 and H2 were not supported.

For depression, a negative main effect for appearance evaluation was identified. While none of the 2-way interactions were significant, a 3-way interaction was revealed. To interpret the nature of the 3-way interaction, analyses were done separately for the experimental and control group (i.e., the 3-way interaction was decomposed into two 2-way interactions representing high and low levels, 1 *SD* above and 1 *SD* below the mean, respectively, of the third predictor; Aiken & West, 1991). Thus, depression was regressed on appearance evaluation and self-esteem in the first step, followed by their interaction in the second step. For the experimental group, there were significant main effects for appearance evaluation, $\beta = -.46$; $t(6, 38) = -3.29$; $p < .01$, and self-esteem, $\beta = -.30$; $t(6, 38) = -2.00$; $p < .05$. There was also a significant interaction effect between appearance evaluation and self-esteem, $\beta = .44$; $t(6, 38) = 3.26$; $p < .01$. At low levels of self-esteem, increased appearance evaluation scores were associated with lower depression ($b = -2.44$; $p < .01$; supporting H1), while for high levels of self-esteem, appearance evaluation did not predict depression ($b = .05$; $p > .05$; supporting H2). For the control group, there was a main effect for appearance evaluation, $\beta = -.59$; $t(6, 38) = -4.06$; $p < .001$, but not for self-esteem or for the interaction of the two predictors (see Figure 1). Thus, H3 was supported.

With regard to feelings of anger, there was a negative main effect for appearance evaluation, a 2-way interaction between condition and self-esteem, as well as a 3-way interaction effect. Again, analyses were carried out separately for the experimental and control groups to interpret the nature of the 3-way interaction. For the experimental group, there was a significant main effect for self-esteem, $\beta = -.52$; $t(6, 38) = -4.03$; $p < .001$, as well as a significant interaction effect, $\beta = .64$; $t(6, 38) = 5.42$; $p < .001$. At low self-esteem, increased appearance evaluation was associated with lower levels of anger ($b = -1.80$; $p < .01$; supporting H1), whereas at high self-esteem appearance evaluation positively predicted feelings of anger ($b = .90$; $p < .05$; not supporting H2). For the control group, there was a main effect only for appearance evaluation, $\beta = -.44$; $t(6, 38) = -2.55$; $p < .05$ (see Figure 2), but no significant interaction. Thus, H3 was supported.

With regard to happiness, there was one main effect of condition (in favor of the control group), but no significant interaction effects. For confidence and feelings of physical attractiveness, only positive main effects for appearance evaluation were revealed. Thus, H1 and H2 were not supported for these dependent variables.

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Table 2 Moderated Hierarchical Regression of Condition (Self-Objectification), Appearance Evaluation and Self-Esteem Effects on Mood and Body Satisfaction States

	Anxiety ($\Delta R^2 = .31^{**}$, .03, .01)	Depression ($\Delta R^2 = .37^{**}$, .04, .07**)	Anger ($\Delta R^2 = .24^{**}$, .08*, .17**)	Happiness ($\Delta R^2 = .23^{**}$, .01, .00)	Confidence ($\Delta R^2 = .27^{**}$, .02, .01)	Feeling fat ($\Delta R^2 = .44^{**}$, .01, .04*)	Physically attractive ($\Delta R^2 = .23^{**}$, .01, .00)	Satisfaction with shape and size ($\Delta R^2 = .34^{**}$, .07*, .03*)
	β	β	β	β	β	β	B	β
Step 1								
Condition	.32**	.24**	.21*	-.24*	-.26**	.21*	.12	-.12
AE	-.20	-.45***	-.21	.19	.28**	-.57***	.31**	.48***
SE	-.32**	-.14	-.30**	.23*	.26*	-.03	.16	.09
Step 2								
Condition	.31**	.22**	.19*	-.25*	-.25**	.20*	.12	-.10
AE	-.12	-.39**	-.14	.13	.34*	-.61***	.38*	.63***
SE	-.26	-.04	-.13	.29	.24	.003	.20	-.06
Condition \times AE	-.08	-.04	-.03	.09	-.09	.08	-.07	-.25
Condition \times SE	-.09	-.17	-.26	-.09	.03	-.05	-.08	.23
AE \times SE	.19	.22*	.29**	.04	-.10	.10	.09	-.21*
Step 3								
Condition	.27**	.10	-.01	-.25*	-.20	.10	.15	-.01
AE	-.15	-.50***	-.32*	.13	.38*	-.69***	.40*	.71***
SE	-.27	-.05	-.15	.29	.24	-.01	.21	-.05
Condition \times AE	-.06	.02	.07	.09	-.12	.11	-.08	-.29*
Condition \times SE	-.11	-.23	-.36**	-.09	.06	-.08	-.06	.27
AE \times SE	.11	-.02	-.10	.04	.01	-.08	.15	-.03
Condition \times AE \times SE	.14	.41**	.65***	.000	-.17	.31*	-.10	-.29*

Note. ΔR^2 values show the incremental R^2 value for each step. * $p < .05$; ** $p < .01$; *** $p < .001$.

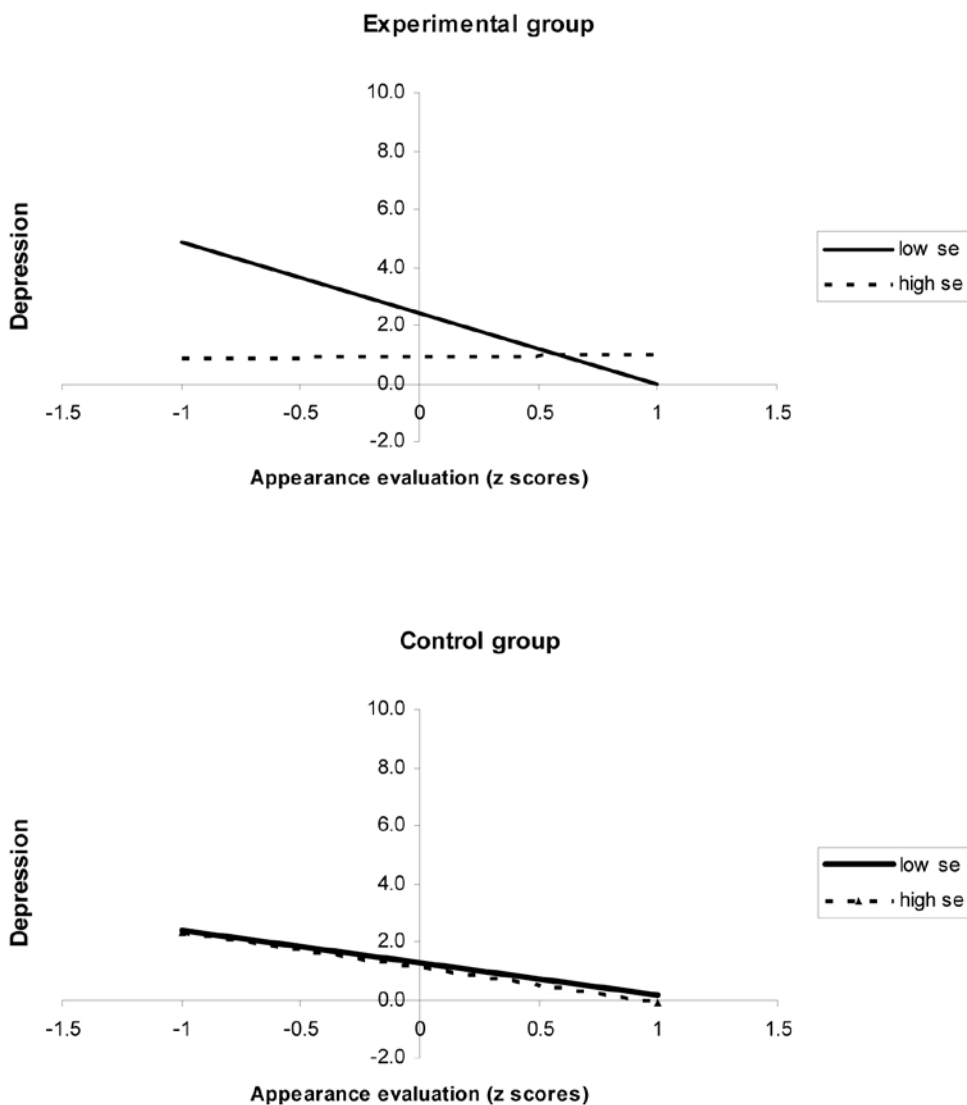


Figure 1 — Depression predicted by appearance evaluation and self-esteem under conditions of self-objectification (experimental) or control.

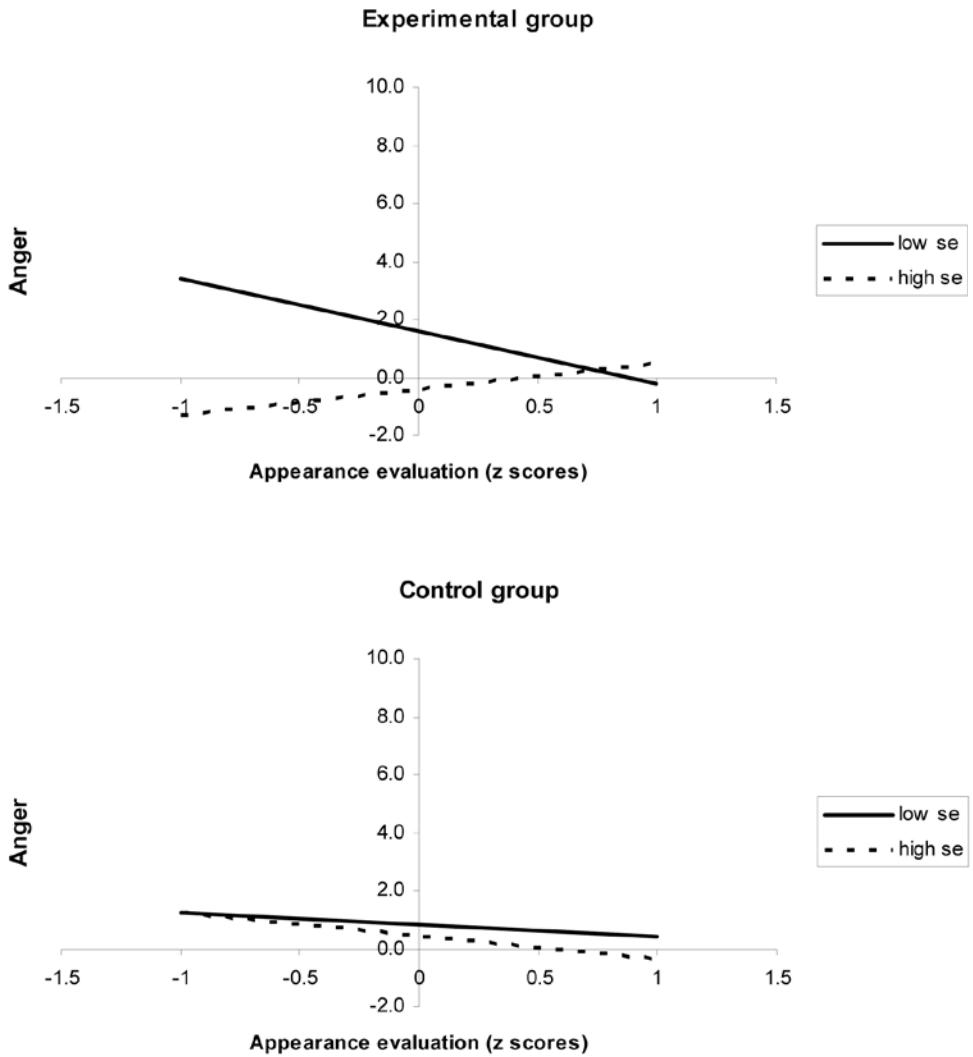


Figure 2 — Anger predicted by appearance evaluation and self-esteem under conditions of self-objectification (experimental) or control.

For feeling fat, there was a negative main effect of appearance evaluation as well as significant 3-way interaction. For the experimental group, there was a main effect of appearance evaluation, $\beta = -.50$; $t(6, 37) = -3.46$; $p < .001$, and a significant interaction between appearance evaluation and self-esteem, $\beta = .37$; $t(6, 37) = 2.77$; $p < .01$. Thus, for low self-esteem increased appearance evaluation

was associated with lower levels of feelings of fatness ($b = -2.61$; $p < .01$; supporting H1), and for high self-esteem appearance evaluation did not predict feelings of fatness ($b = -.25$; $p > .05$; supporting H2). For the control group, there was a main effect of appearance evaluation, $\beta = -.69$; $t(6, 38) = -5.16$; $p < .001$, but no significant interaction. Thus, H3 was supported. The results for feeling fat by group are graphically depicted in Figure 3.

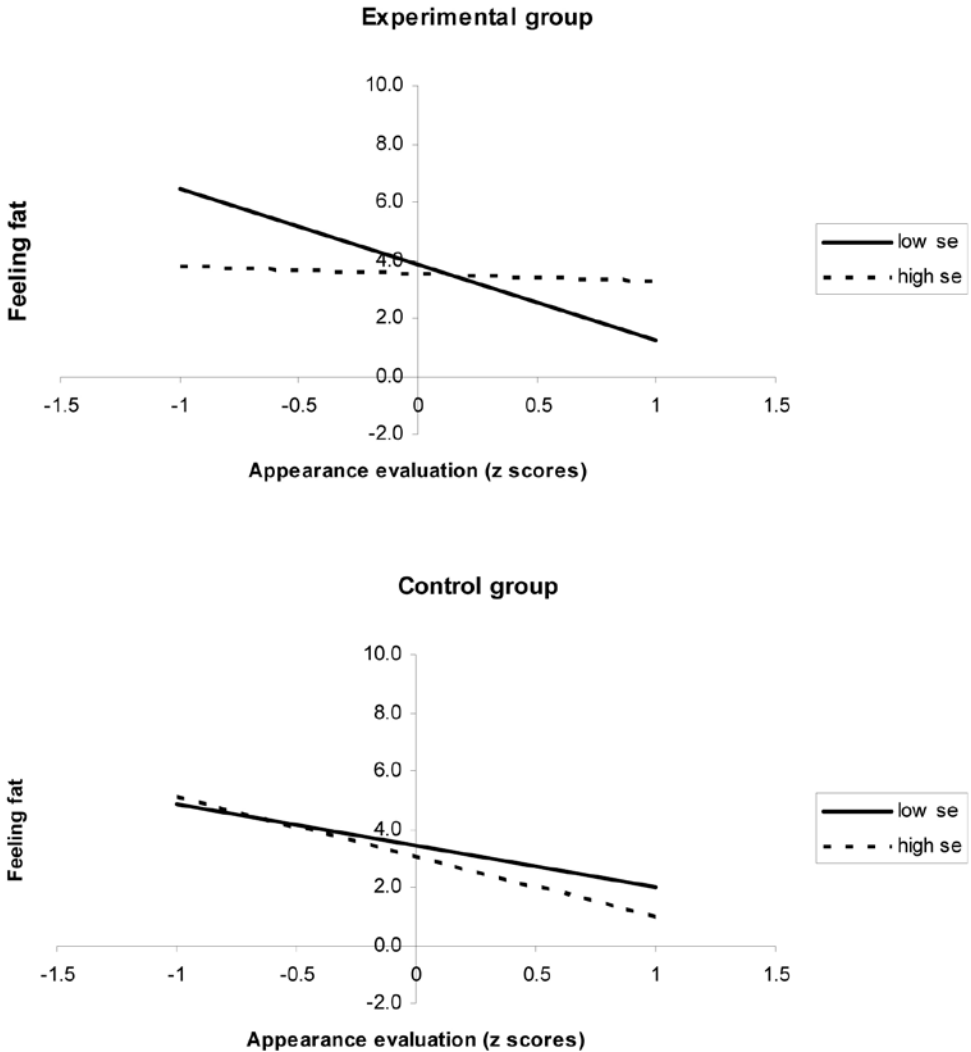


Figure 3 — Feelings of fatness predicted by appearance evaluation and self-esteem under conditions of self-objectification (experimental) or control.

As can be seen in Table 2, a positive main effect for appearance evaluation, a 2-way interaction effect between condition and appearance evaluation, and a 3-way interaction effect were evident for state levels of satisfaction with body shape and size. In the experimental group, there was a main effect of appearance evaluation, $\beta = .30$; $t(6, 38) = 2.02$; $p < .05$, as well as an interaction effect, $\beta = -.44$; $t(6, 38) = -2.97$; $p < .01$. Specifically, for low self-esteem increased appearance evaluation positively predicted satisfaction ($b = 2.12$; $p < .01$; supporting H1), but for high self-esteem appearance evaluation was not a significant predictor of satisfaction with body shape and size ($b = -.45$; $p > .05$; supporting H2). Once again, for the control group there was a main effect only for appearance evaluation, $\beta = .71$; $t(6, 37) = 5.10$; $p < .001$, but no significant interaction. Thus, H2 was supported. Figure 4 displays the results for this variable by condition.

Discussion

The present study sought to further research the effects of self-objectification on appearance and mood states in exercisers by examining the interactive effects of self-objectification, self-esteem, and appearance evaluation in predicting such states. To this end, we modified Fredrickson et al.'s (1998) experimental protocol to make the manipulation exercise specific. Our results showed that the manipulation worked, as women in tight revealing exercise clothes (the experimental condition) reported more appearance-related thought activation than those in baggy exercise attire (the control group). This result demonstrates that wearing tight/revealing exercise attire heightens exercisers' levels of state self-objectification. This finding is concordant with the results of previous cross-sectional research using a sample of physically active women (Greenleaf, 2005). Further, the result builds on Wolfe's (1999) finding that merely activating thoughts about exercising in revealing attire may trigger feelings of self-objectification.

Self-esteem was a significant moderator in the relationship between appearance evaluation and a range of mood and body satisfaction states among women who were exposed to the self-objectifying situation thus supporting H1 and H2. In contrast, this was not the case for participants in the control (non-self-objectified) condition, which supports H3. The aforementioned effects were in the expected direction. Women who judged themselves to be relatively unattractive were much less negatively affected (with regard to mood and body image states) by the self-objectifying situation if they had relatively high levels of self-esteem, as opposed to low levels self-esteem. Thus, our findings are supportive of the assertion that self-esteem may act as buffer against the deleterious effects of self-objectification on negative mood outcomes. These findings are concordant with the results of Jones and Buckingham (2005) who found that another type of body image threat (comparisons to attractive others) was not as detrimental to individuals with high levels of self-esteem, compared with peers with less favorable self-esteem scores. Baumeister's (1999) contention that individuals with high levels of self-esteem are more resilient to stress thus also appears to apply in situations in which appearance evaluation is likely to be threatened. Our results build on results reported by Breines et al. (2008) who used a diary approach to show that women with high levels of self-esteem experienced higher levels of well-being in self-objectifying situations than their lower self-esteem counterparts.

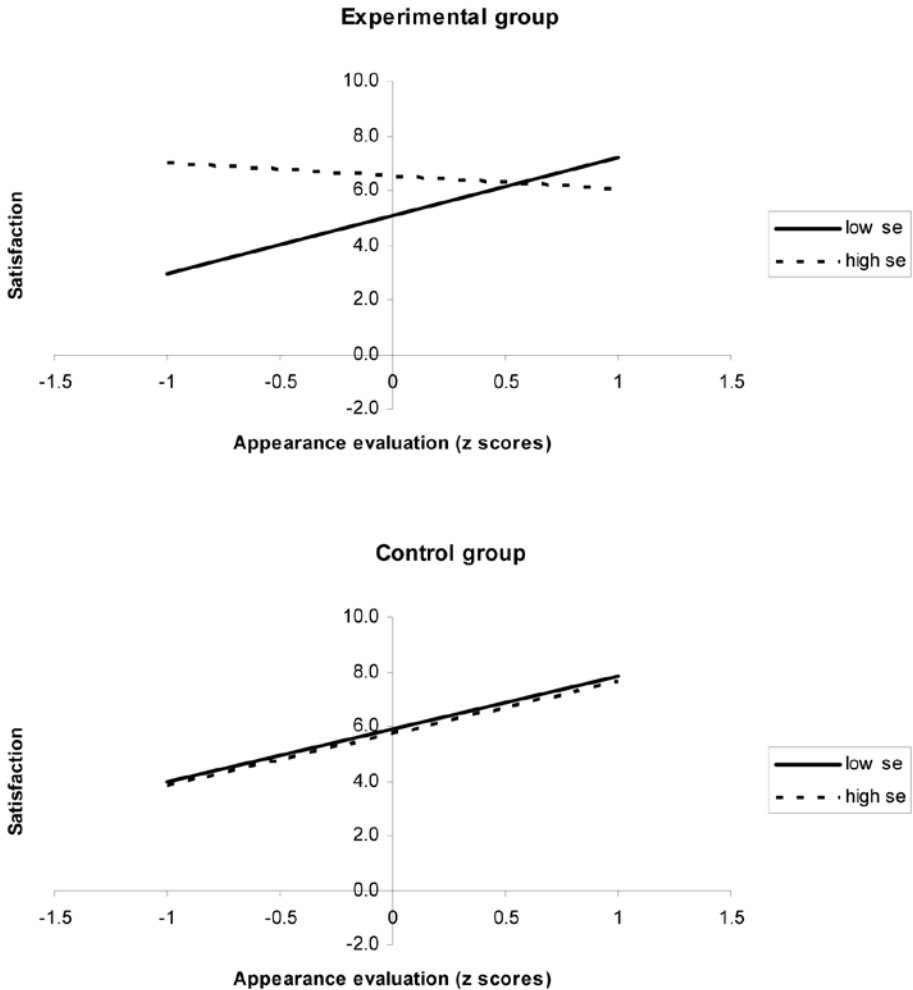


Figure 4 — Satisfaction with body shape and size predicted by appearance evaluation and self-esteem under conditions of self-objectification (experimental) or control.

At first glance, the main implication of this set of results is that interventions designed to reduce the negative effects of self-objectification could focus on implementing self-esteem enhancing strategies. Self-esteem can be enhanced in various ways. For example, fostering a sense of competence across a variety of life domains is considered one of the main vehicles for self-esteem development along with the provision of unconditional support and approval (Harter, 1999). It is important to note here that while self-esteem enhancing strategies might be useful in reducing the negative impact of self-objectification, such strategies are not always beneficial

in terms of improving levels of mental well-being. This seems to be the case for people who have *contingent* levels of self-esteem, that is, use external contingencies or criteria to validate their self-worth (Crocker, 2002). For example, Patrick, Neighbors and Knee (2004) found that women who had high levels of contingent self-esteem (as well as lower perceptions of attractiveness) reported a decrement in well-being following exposure to media images depicting attractive models, compared with women with lower levels of contingent self-esteem. Thus, the moderating role of self-esteem may be dependent upon what self-esteem is based. It is possible that it is the facilitation of stable or unconditional self-esteem that may best protect women against the deleterious consequence of self-objectification on well-being. However, in this study, we only examined the level, as opposed to the quality of self-esteem. In future work, researchers should consider adding measures of contingent and true self-esteem.

It is important to note that the results revealed no significant three-way interactions for some of the outcome variables (i.e., anxiety, happiness, confidence and physical attractiveness), thus only partly supporting our hypotheses. Further, the predictors explained much less variance in these outcome measures compared with the remaining dependent variables. Thus, in this sample it appears that self-esteem does not act as a buffering mechanism against increases in anxiety and decreases in happiness and confidence in young women who self-objectify. It is important that more research is conducted to ascertain the role of both trait and state self-esteem in buffering the effects of self-objectification on distinct mood states. Despite the lack of significant interaction effects, significant main effects of condition (i.e., self-objectification) on anxiety, happiness, and confidence were observed, revealing that those in the experimental condition reported higher levels of anxiety and lower levels of happiness and confidence compared with those in the control condition. Such findings support tenets of objectification theory (Fredrickson & Roberts, 1997).

A limitation of the study is that we used an ethnically homogenous sample of young female University students. Thus, the extent to which the results of this study can be generalized to a more ethnically heterogeneous and older sample of female exercisers remains to be tested. Second, we did not examine the types of exercise the sample engaged in. It is possible that women taking part in appearance-oriented exercise (e.g., aerobic dance) were more accustomed to self-objectifying exercise situations than those involved in competence-based exercise or sports (e.g., basketball, soccer). This is because the latter often wear baggy or less revealing exercise attire whereas those participating in appearance-oriented sports tend to wear more revealing outfits. However, it is important to note that we did control for usual exercise clothes worn in our analyses. Thus, our results suggest that the effects observed would remain significant regardless of exercise attire usually worn, and therefore, by implication, perhaps the type of exercise engaged in. Further, we did not examine any potential longer-term effects of self-objectification on mood and body satisfaction. It would be useful if studies examined such effects beyond the end of the experiment. Finally, it would be worth examining the degree to which individuals' reactions and social comparisons in self-objectifying situations are automatic and whether such reactions can be modified via conscious reflections (e.g., see Want, 2009).

In conclusion, the results of the present experimental study illustrate a state of self-objectification can be induced in physically active female University students.

More importantly, the results suggest that among exercising women who experience self-objectification, self-esteem serves a buffering function in the relationship between appearance evaluation and various mood and body satisfaction states. The results add further support to the notion that not all women are equally negatively affected by self-objectifying experiences. While it may be impossible for women to avoid experiences in exercise settings (and generally in life) that lead to feelings of self-objectification, the results of the current study imply that strategies designed to enhance self-esteem may help protect against some of the deleterious outcomes of such experiences.

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